

Major Areas of Research

Plug Flow Reactions - Completion - 1/4" Aluminum - 1/8" Aluminum  
Fe contamination in Plug Flow - Multi stage  
Oxygen - Radical Source in Dehydrodimerization and  
Addition Reaction  
Alkylation of tBHP with tBA

Major Conclusions

Best results obtained in aluminum and glass reactors.

Fe contamination has drastic negative effect on the reaction in plug flow, multi stage reaction. Highest attainable E G concentration is drastically lowered as is the efficiency of utilization of DtBP. Economic and marketing impact of such contamination would be great. Commercial scale and operation would reduce the likelihood of such contamination due to reduced metal surface areas and contact times of the reactants with metal sources.

Oxygen as a radical source while theoretically very interesting appears to suffer unsalvageable limitation for the production of E G.

Alkylation of tBHP with tBA for the production of DtBP appears to be quite practical.

Commercial production of DtBP, a high priced speciality chemical, from i-butane in a pilot plant operation should be examined as a means of financing a portion of the pilot plant operations for the E G process.

# ALKYLATION OF tBHP WITH tBA

H<sup>+</sup> RESIN CATALYZED

Run No	CHARGE M TO					$\frac{x\text{BHP}}{x\text{BA}} M$	1 HR @ 70°C	2 HR @ 70°C	2 HR @ 70°C 1 HR @ 80°C
	tBHP	tBA	EtOH	MeOH	H <sub>2</sub> O		% Conv tBHP	% Conv tBHP	% Conv. tBHP
A	48.75	51.25				1.05	75-78	88-90	97-100
B	44.44	55.56				1.25	85-87	97-100	
C	31.0	38.76	6.0	8.7	15.5	1.25	82-85	95-100	95-100